

Minutes of Meeting #20 of RTCA SC-186 Working Group 3
For Maintenance of the ADS-B 1090 MHz MOPS
<http://adsb.tc.faa.gov/WG3.htm>

The meeting was called to order by Co-Chair Thomas Pagano at 11:00am EST, 13 February 2006, as a teleconference. Mr. Pagano welcomed all attendees and asked that each attendee introduce themselves and their organization. The attendees for all or part of the meeting included:

Larry Bachman, Johns Hopkins APL	Ron Jones, FAA ASD-140	Stuart Searight, FAA TC – ACB-120
Jack Brooks, L-3/Titan, FAATC-ACB-130	Al Marshall, Sensis Corp	Bob Semar, United Airlines
Rob Duffer, FAA, AIR-130	James Maynard, Garmin AT	Ronald Staab, SAIC
Gary Furr, L-3/Titan, FAATC-ACB-130	Tom Pagano, FAA TC – ACB-130	John Van Dongen, FAA TC – ACB-130
Doug Guetter, L-3 / ACSS	Stacey Rowland, L-3 / ACSS	Don Walker, Honeywell
Bill Harman, MIT Lincoln Lab	Bob Saffell, Rockwell Collins	
Carl Jezierski, FAA TC – ACB-120	Kurt Schueler, Garmin International	

1. Tom Pagano indicated that this teleconference has been called to review and discuss the proposed changes to the 2 documents that will be called “Change 1 to DO-260” and “Change 1 to DO-260A.”
2. Gary Furr then referred the meeting to Working Paper WP20-06, which is the proposed Change 1 to DO-260. The only changes between WP20-06 and the document that was reviewed during Meeting #19 is that an Executive Summary has been added. There were no comments on the Executive Summary. Tom Pagano then advised the meeting that during the meeting of the ICAO SCRSP Technical Subgroup (TSG), 2 – 10 February, these changes had been discussed and the recommended changes that are contained in the proposed “Change 1 to DO-260” were requested by the United States member to be used to update Appendix A of the 1090ES SARPs Technical Manual, which specifically references DO-260-compliant systems. Tom indicated that there was reluctance on the part of some members of the TSG to allow the changes to the definition of what NUC could be based upon, until this matter could be discussed during a meeting of ICAO SCRSP Working Group B during their meeting in Montreal, 8-12 May 2006. Tom further indicated that it was his recommendation that we continue with “Change 1 to DO-260” with the proposed changes to NUC to indicate that it should be based only on integrity. **It was agreed by the Working Group** to follow this approach.
3. Next, Gary Furr began to present Working Paper WP20-02, which describes the five (5) changes that have been made to the “Change 1 to DO-260A” since Meeting #19 in December. Each change was taken individually and discussed. First, there was a change that was identified by Thales ATM for a typographical error in the “Commentary” sections of both sections §2.2.3.2.4.8.2.1 and §2.2.3.2.4.8.3.1 for the mathematical symbol “Phi.” There were no discussions or questions related to this proposed change. Therefore it was **agreed by the Working Group** that this change should be added to the Change 1 document for DO-260A.
4. The second major change identified in WP20-02 to the “Change 1 to DO-260A,” related to the proposed increase in transmitted power for Class A3 equipment from 125W to 200W. Ron Jones explained the background for this request, indicating that it had already been accepted by the ICAO SCRSP TSG more than a year ago for addition into the 1090ES SARPs. Ron Staab then indicated that he felt that there was a change that additionally needed to be made that was associated with this proposed change. Ron Staab directed the meeting to Table E-1 where several changes were necessary to reflect the proposed change from 51 dBm to 53 dBm, and a calculation required to correctly represent the “Link Budget Ranges” that would be associated with the increased transmitted power. Bill Harman agreed to calculate the “Link Budget Ranges” that should be reflected in Table E-1 and

send them to Gary for inclusion in the proposed Change 1 to DO-260A. With this addition, **the Working Group agreed** that this change should be added to the “Change 1 to DO-260A.”

5. The third major change identified in WP20-02 to the “Change 1 to DO-260A,” related to the addition of some language to clarify the *Note* that was proposed for the SIL parameter so that manufacturers would not be inclined to hard wire the parameter to ZERO. Gary pointed out that during the review of the original proposed SIL *Note* during the ICAO SCRSP TSG meeting, the International members wanted to add both text to the *Note* and to one of the requirements regarding whether the SIL parameter was static or dynamic. Jim Maynard made one suggestion to change the word “provision” to “provide,” which was accepted by the Working Group. **It was agreed by the Working Group** that this change should be accepted into “Change 1 to DO-260A.”
6. The fourth major change identified in WP20-02 to the “Change 1 to DO-260A,” related to the problem that has been identified by AirServicesAustralia related to the observation of several occurrences of a situation where the reported ADS-B position shows a significant jump in longitude. In Working Paper WP20-03 Bob Saffell described the details of the situation which has been seen in Rockwell Collins transponders in Australia and New Zealand whereby the transponder incorrectly selects the longitude zone for the CPR calculation. It was noted that this problem had been discussed during the ICAO SCRSP TSG meeting, and during that meeting, a proposal was made to add several Commentary *Notes* and several requirements into the CPR definition section of the 1090ES SARPs in order to place boundary checks on the ADS-B decoder. These proposals for the 1090ES SARPs additions were detailed in Working Paper WP20-04, with a copy of the SARPs text of the CPR section. The essence of the requirements that were added to the CPR sections shown in WP20-04 was to add a step into the CPR decode section indicating that “if the computed value of $Rlat_i$ IS inconsistent with the coverage area of the receiver and the value of $Rlon_i$ is NOT, then the decoder would try the next nearest NL zone and repeat the decode process.” The requirement, as added to the proposed SARPs, went on to indicate that if the result of this second set of calculations was still inconsistent with the receiver coverage area, then the decoded data would be discarded and a new global decode would be performed.

There was considerable discussion related to this proposed requirement. Some members indicated that they wanted to place some reasonableness test on the initial calculation to identify gross errors, as opposed to any error at all. Tom Pagano also pointed out that he was not comfortable with the idea of discarding data without sending it to the automation systems. Bob Saffell also gave a verbal description of a set of test procedures that he had written and passed on to Gary Furr, but that Gary decided not to distribute to the Working Group based on several issues that he had asked for clarification on. There were further discussions on how to view and word the test procedures and during that discussion, Bob Saffell indicated that he had seen a problem in the simulation data that he used and hence would have to recalculate parts of the proposed test procedure prior to any distribution to the Working Group.

It was decided that Bob Saffell would rework his simulations and make needed corrections to the test procedures and forward them back to Gary for distribution to the Working Group. It was further agreed that Bob Saffell, Bill Harman and Stacey Rowland would set up a discussion on adapting a change to the proposed requirements change in the 1090ES SARPs and MOPS and report back to the Working Group at a teleconference that was set up to start at 11:00am EST on Monday, 27 February 2006.

7. The Working Group then agreed to move on to a discussion on the fifth major change that had been identified in WP20-02, which presented the actual Test Procedures that had been modified for the Preamble tests in §2.4.4.4.2.2 and §2.4.4.4.2.3 that were identified as needing changes and were discussed during Meeting #19 in WP19-10. There was no discussion or further questions related to

this proposed change. **It was agreed by the Working Group** that this change should be accepted into “Change 1 to DO-260A.”

8. The Working Group then heard from Rob Duffer regarding the comments that he had received thus far related to the draft of TSO C166A. Rob indicated that he had received only minor comments and that he had allowed an extension of the delivery date of comments to Airbus until 17 February. Don Walker of Honeywell asked if he could explain one of the comments submitted by Honeywell and the Working Group agreed to hear and discuss his comment. Don indicated that Honeywell is responding to an RFP from AirServicesAustralia which requests non-transponder devices that may be installed in aircraft that already have Mode S transponders installed. According to *Note #2* in DO-260A §1.2.4.1.2, and again in §3.0, “*Installation of Non-Transponder-Based 1090 MHz ADS-B equipment in airplanes equipped with Mode-S transponders is prohibited.*” Don indicates that Honeywell is participating in the Hybrid Surveillance MOPS activity and does not see the conflict alluded to in DO-260A. After a brief discussion, Rob Duffer agreed to set up a separate teleconference on this issue to discuss it further with interested parties.
9. **It was agreed that the Working Group** members would make available several hours starting at 11:00am EST on Monday, 27 February 2006 for a teleconference related to the *CPR Notes*, requirements and test procedures.
10. The **Working Papers** for all WG-3 Meetings, as well as the Meeting Agendas, Meeting Minutes, Meeting Schedules and proposed modifications to both DO-260 and DO-260A will be posted on the ADS-B 1090 MHz web site maintained at the FAA William J Hughes Technical Center, located at:
<http://adsb.tc.faa.gov/WG3.htm>